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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,365	04/11/2006	Munetaka Watanabe	Q78082	9055

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EXAMINER	
HSIEH, HSIN YI	

ART UNIT	PAPER NUMBER
2811	

MAIL DATE	DELIVERY MODE
11/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/575,365	WATANABE, MUNETAKA	
	Examiner	Art Unit	
	Hsin-Yi (Steven) Hsieh	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 April 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

LYNNE GURLEY
SUPERVISORY PATENT EXAMINER
AU 2811, TC 2800

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20060411*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 04/11/2006 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features of "a light-emitting diode comprising a flip-chip-type gallium nitride compound semiconductor light-emitting device

according to claim 1" of claim 12 and "a lamp comprising a flip-chip-type gallium nitride compound semiconductor light-emitting device according to claim 1" of claim 13 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claim 3 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 3 recites a range of thickness wider than that of claim 2.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 1 recites the limitation "the layers" in the fourth line of the claim. There is insufficient antecedent basis for this limitation in the claim.

9. Claim 1 recites the limitation "this order" in the fifth line of the claim. There is insufficient antecedent basis for this limitation in the claim.

10. Claim 9 recites the limitation "said compound semiconductor light-emitting device" in the fourth line of the claim. There is insufficient antecedent basis for this limitation in the claim.

11. Claims 2-8 and 10-13 are rejected because they depend on the rejected claims 1 and 9.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

13. **Claims 1, 6, 8-9, and 12-13** are rejected under 35 U.S.C. 102(a) as being anticipated by Kamimura et al. (JP 2002368271 A) as can be understood since claims 1-13 have been rejected under 35 U.S.C. 112.

14. Regarding **claim 1**, Kamimura et al. teach a flip-chip-type gallium nitride compound semiconductor light-emitting device (flip-chip type III nitride compound light emitting device; Abstract) comprising a substrate (11; Drawing 1, paragraph [0019]), an n-type semiconductor layer (n-type layer 13; Drawing 1, paragraph [0019]), a light-emitting layer (the layer 14 containing the layer which emits light; Drawing 1, paragraph [0020]), and a p-type semiconductor layer (p type layer 15; Drawing 1, paragraph [0021]), a negative electrode (n lateral electrode film 21; Drawing 1, paragraph [0023]) provided on said n-type semiconductor layer (13; see Drawing 1), and a positive electrode (p lateral electrode film 20; Drawing 1, paragraph [0023]) provided on said p-type semiconductor layer (15; see Drawing 1), the layers being successively provided atop said substrate (11) in this order (this limitation is rejected by 35 U.S.C. § 112) and being composed of a gallium nitride compound semiconductor (paragraph [0019-0023]), wherein said positive electrode (20) has a three-layer structure (18p, 20a, and 20b) comprising an ohmic electrode layer composed of rhodium (p electrode 18 which consists of Rh; Drawing 1, paragraph [0022]) which is in contact with said p-type semiconductor layer (15; see Drawing 1), an adhesion layer composed of titanium (a substrate layer 20a which consist of Ti; Drawing 1, paragraph [0023]) which is provided on said ohmic electrode layer (18p; see Drawing 1) and has a thickness of 10 Å or more (10 nm, i.e. 100 Å; paragraph [0023]), and a bonding pad layer (the upper layer 20b; Drawing 1, paragraph [0023]) provided on said adhesion layer (20a; see Drawing 1) and being composed of a metal selected from the group consisting of

gold, aluminum, nickel, and copper, or composed of an alloy containing at least one of these metals (Au, i.e. gold; paragraph [0023]).

15. Regarding **claim 6**, Kamimura et al. also teach A flip-chip-type gallium nitride compound semiconductor light-emitting device according to claim 1, wherein said bonding pad layer (20b) has a thickness of at least 1,000 Å (1 micrometer, i.e. 10,000 Å; paragraph [0023]).

16. Regarding **claim 8**, Kamimura et al. also teach A flip-chip-type gallium nitride compound semiconductor light-emitting device according to claim 1, wherein said bonding pad layer (20b) is composed of gold (paragraph [0023]).

17. Regarding **claim 9**, Kamimura et al. also teach a positive electrode (p lateral electrode film 20; Drawing 1, paragraph [0023]) for use in a gallium nitride compound semiconductor light-emitting device (flip-chip type III nitride compound light emitting device; Abstract), wherein said positive electrode (20) has a three-layer structure (18p, 20a, and 20b) comprising an ohmic electrode layer composed of rhodium (p electrode 18 which consists of Rh; Drawing 1, paragraph [0022]) which is brought into contact with a p-type semiconductor layer (p type layer 15; Drawing 1, paragraph [0021]) of said compound semiconductor light-emitting device (see Drawing 1), an adhesion layer composed of titanium (a substrate layer 20a which consist of Ti; Drawing 1, paragraph [0023]) which is provided on said ohmic electrode layer (18p; see Drawing 1) and has a thickness of 10 Å or more (10 nm, i.e. 100 Å; paragraph [0023]), and a bonding pad layer (the upper layer 20b; Drawing 1, paragraph [0023]) provided on said adhesion layer (20a; see Drawing 1), said bonding pad layer (20b) being composed of a metal selected from the group consisting of gold, aluminum, nickel, and copper, or composed of an alloy containing at least one of these metals (Au, i.e. gold; paragraph [0023]).

18. Regarding **claim 12**, Kamimura et al. also teach a light-emitting diode (a light emitting device 1; Drawing 2, paragraph [0023]) comprising a flip-chip-type gallium nitride compound semiconductor light-emitting device according to claim 1.

19. Regarding **claim 13**, Kamimura et al. also teach a lamp (flip chip type LED 2; Drawing 2, paragraph [0023]) comprising a flip-chip-type gallium nitride compound semiconductor light-emitting device according to claim 1.

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

21. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

22. **Claims 2-5, 7, and 10-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamimura et al. as applied to claim 1 above as can be understood since claims 1-13 have been rejected under 35 U.S.C. 112.

23. Regarding **claims 2-3 and 10-11**, Kamimura et al. teach said adhesion layer (20a) has a thickness of 1 nm - 100 nm, i.e. 10 Å - 1000 Å (paragraph [0010]), which overlaps the claimed range of **claims 2 and 10**, 500 Å to 3,000 Å, and the claimed range of **claims 3 and 11**, 1,000 Å or more. This establishes a prima facie case of obviousness (see MPEP 2144.05 I).

24. Regarding **claims 4 and 5**, Kamimura et al. do not teach said ohmic electrode layer (18) has a thickness of, regarding to **claim 4**, 100 Å to 3,000 Å, and regarding to **claim 5**, 500 Å to 2,000 Å.

The parameters such as thickness of the ohmic electode layer in the art of semiconductor manufacturing process are subject to routine experimentation and optimization to achieve the desired film quality during device fabrication. Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the thickness of the ohmic electrode layer within the range as claimed in order to form a high quality film.

25. Regarding **claim 7**, Kamimura et al. teach said bonding pad layer (20b) has a thickness of 0.1 micrometers – 50 micrometers, i.e. 1,000 Å – 500,000 Å (paragraph [0010]), which overlaps the claimed range of 3,000 Å to 5,000 Å. This establishes a prima facie case of obviousness (see MPEP 2144.05 I).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsin-Yi (Steven) Hsieh whose telephone number is 571-270-3043. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne A. Gurley can be reached on 571-272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HH
11/19/2007

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